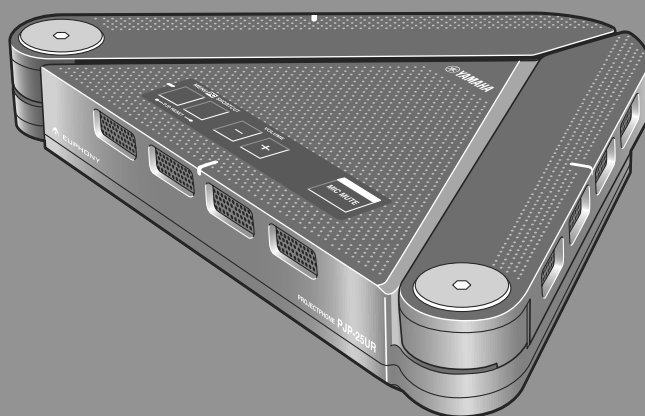




# PJP-25UR

Conference Microphone Speaker

*ProjectPhone*



User's Manual



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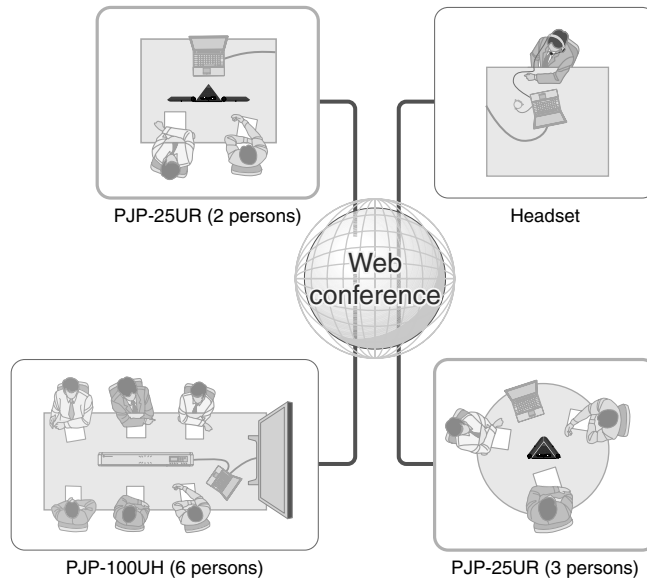
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# Introduction

Thank you for purchasing Yamaha PJP-25UR. This product is a microphone/speaker unit to be connected to a computer with the USB cable for use as its audio terminal. Before operating this unit, please read this manual carefully.



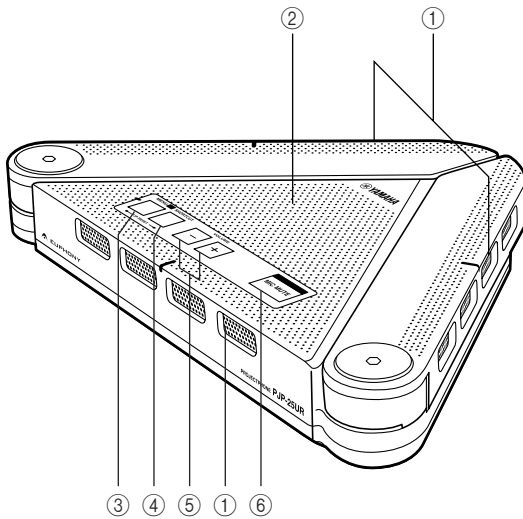
## ■ Connection with a computer

This unit can be connected to a computer for use as the microphone/speaker unit of the web conference or VoIP telephone system. Incorporating this unit as the microphone speaker into the web conference or VoIP telephone system provides a smoother conferencing experience for both listeners and talkers.

## ■ Arm-type microphones for high audio quality

Depending on the using environment, the microphones can control the audio pickup area so that the clear conversation is assured.

# Controls and Functions



## ① Arrayed microphones

Picks up the talker's voice.

## ② Speaker

Outputs the sounds.

## ③ MENU/PC

Press to activate the PJP-25UR Controller.

## ④ SHORTCUT

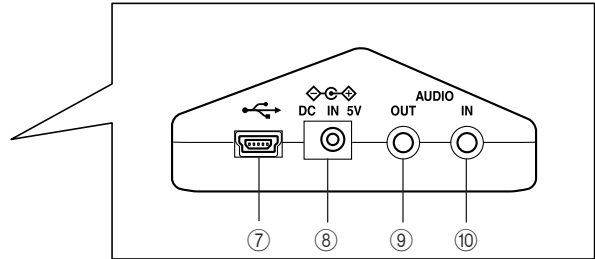
Press to activate the function specified in the PJP-25UR Controller.

## ⑤ VOLUME +/-

Press to adjust the speaker volume. Holding either key increases or decreases the volume continuously.



- Pressing MENU/PC and VOLUME + at the same time switches the environment setting to "Conference Room". Pressing MENU/PC and VOLUME – at the same time switches it to "Normal". For details, refer to "Changing the environment setting" (page 8).
- Holding down MENU/PC and SHORTCUT at the same time resets this unit's settings.



## ⑥ MIC MUTE

Press to temporarily turn off (mute) the microphones. To cancel the mute function, press it again.

## ⑦ USB port

Connect to the computer using the USB cable.

## ⑧ DC IN 5V terminal

Connect the AC adapter (sold separately).

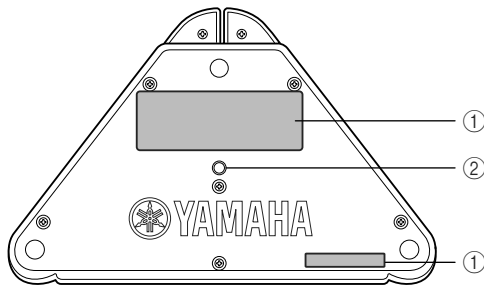
## ⑨ AUDIO OUT terminal

Connect to the line-in on the audio device or computer.

## ⑩ AUDIO IN terminal

Connect to the line-out on the audio device or computer.

## ■ Other



### ① Label

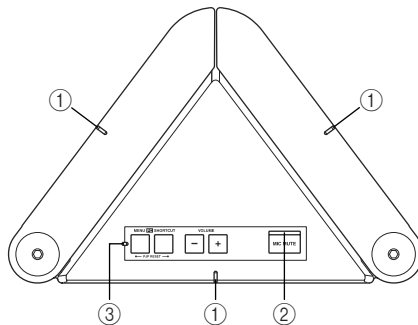
Provides the following information.

- **MODEL No.:** Model number of this unit
- **SER.:** Serial number of this unit

### ② Tripod socket hole

Use to connect a commercially available tripod.

## ■ Functions of the LEDs



### ① Microphone LEDs

- **Mic&Speaker mode:** light in orange
- **Speaker mode:** turn off
- **Maximum speaker volume:** blink in orange five times
- **Changing "Environment" (Conference Room):** blink in orange for three seconds
- **Changing "Environment" (Normal):** blink in orange for three seconds (middle LED only)
- **Reset operation:** blink in orange twice (from left to right)

### ② MIC MUTE LED

- **Normal:** turns off
- **MIC mute:** lights in orange

### ③ Information LED

- **Function assigned to SHORTCUT is being used:** lights in orange
- **Auto-attenuator is running:** blinks in orange

### Note

Since this unit works according to the USB standard, it may turn on the attenuator or speaker mute function automatically to protect the system in case the unit detects high audio levels. If this happens repeatedly, turn down the volume or use the AC adapter (sold separately).

# Connection

## *Check the following before connecting this unit to the computer*

### ■ USB cable

Use the USB cable supplied with this unit.

### ■ System requirement

The computer connected to this unit should meet the following system requirement.

- CPU: Intel® Pentium®/Celeron® processor with 750 MHz or higher (or equivalent)
- OS: Microsoft® Windows Vista®, Microsoft® Windows XP Professional®/Home®, Microsoft® Windows 2000 Professional®
- Memory: 128 MB or more (256 MB or more recommended)
- USB port: USB 1.1 or later (USB 2.0 recommended)

### Notes

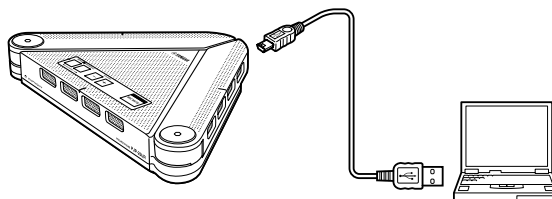
- Connect this unit and the computer directly. Connecting them through a USB hub may cause problems in operation.
- Audio reproduction may be interrupted depending on the computer usage situations (workloads or available memory space).

### ■ About trademarks

- Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and other countries.
- EUPHONY™ is a trademark of DiMAGIC Co., Ltd.
- Intel and Celeron are trademarks or registered trademarks of Intel Corporation and its subsidiaries in the United States and other countries.

## *Step 1: Connecting this unit*

Follow the procedure below to connect this unit to the computer.



### **Connect this unit to the computer using the supplied USB cable.**

The USB driver is automatically installed on the computer.



You do not need to install the USB driver separately because this unit is recognized as a basic audio device by the computer.

### **Installing the PJP-25UR Controller**

By installing and using the PJP-25UR Controller included in the supplied CD-ROM, you can adjust this unit's settings such as the microphone sensitivity, which cannot be controlled with key operations. For details, refer to "Using the PJP-25UR Controller" (page 9).

### Note

Do not use both USB and audio cable connections (between the PJP-25UR and computer) at the same time. Doing so may generate noise.

## Step 2: Checking the connection

After connecting this unit to the computer, follow the procedure below to check whether the computer recognizes this unit properly. In this procedure, Windows XP is used as an example.

**1 From the taskbar, select [Start] - [Control Panel].**

**2 Click "Sounds, Speech, and Audio Devices".**

**3 Click "Sounds and Audio Devices".**

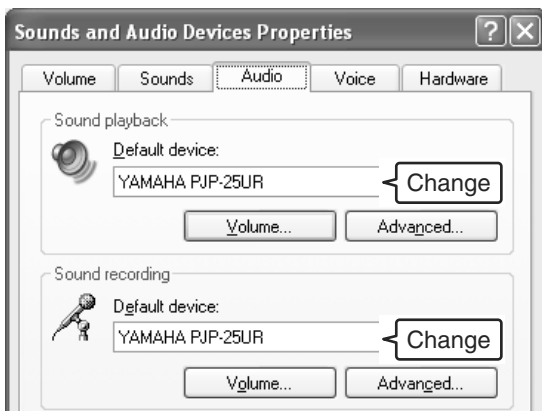
The "Sounds and Audio Devices Properties" screen appears.

**4 Click the "Audio" tab.**



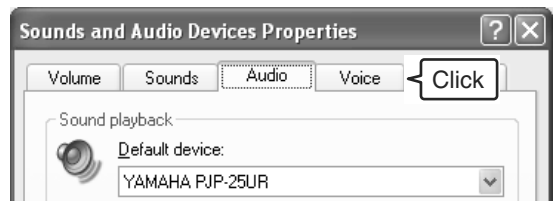
**5 Configure the settings as shown below.**

- "Default device" in "Sound playback":  
YAMAHA PJP-25UR
- "Default device" in "Sound recording":  
YAMAHA PJP-25UR



Normally, "YAMAHA PJP-25UR" is automatically selected when this unit is connected to the computer.

**6 Click the "Voice" tab.**



**7 Configure the settings as shown below.**

- "Default device" in "Voice playback":  
YAMAHA PJP-25UR
- "Default device" in "Voice recording":  
YAMAHA PJP-25UR



Normally, "YAMAHA PJP-25UR" is automatically selected when this unit is connected to the computer.

**8 Click "OK" to close the "Sounds and Audio Devices Properties" screen.**



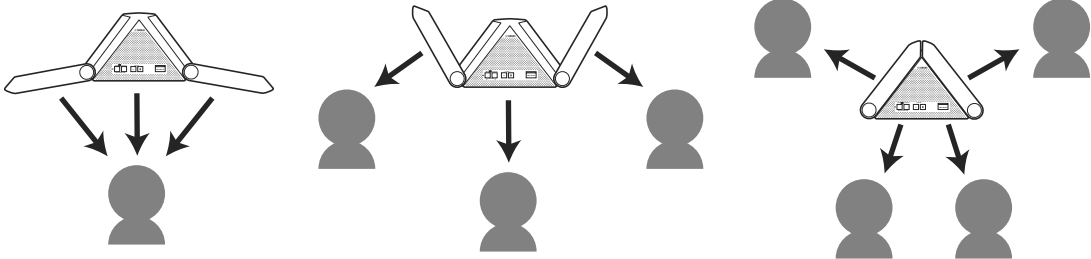
### Step 3: Installing this unit

Read the following note and install this unit at a location where you want to use it.

#### ■ Note on installation

**Install this unit while taking the positions of talkers into consideration.**

To assure clear conversation by getting the most out of the arrayed microphones, adjust the angles of the microphones as shown below.



# Basic Operations

## ■ Adjusting the speaker volume

Press VOLUME +/- to adjust the speaker volume. Holding either key increases or decreases the volume continuously.

## ■ Turning off the microphones temporarily (MIC MUTE)

Press MIC MUTE to temporarily turn off (mute) the microphones. The MIC MUTE LED lights and the microphone LEDs turn off during muting.

Pressing the key again cancels the mute function. (The MIC MUTE LED turns off and the microphone LEDs light.)

## ■ Changing the environment setting

Change the setting, depending on the environment. When using in the normal environment, select "Normal". When using in the quiet environment like a conference room, select "Conference Room".

- Press MENU/PC and VOLUME + at the same time to switch the setting to "Conference Room".
- Press MENU/PC and VOLUME – at the same time to switch the setting to "Normal".

## ■ Activating the PJP-25UR Controller

Press MENU/PC to activate the PJP-25UR Controller.

## ■ Activating the specified function

Press SHORTCUT to activate the function specified in the PJP-25UR Controller.

## ■ Resetting the settings of this unit

Hold down MENU/PC and SHORTCUT at the same time to reset the settings of this unit.

# Using the PJP-25UR Controller

By installing and using the PJP-25UR Controller included in the supplied CD-ROM, you can adjust the unit's settings such as the microphone sensitivity, which cannot be controlled with key operations.

## Installing the PJP-25UR Controller

Follow the procedure below to install the PJP-25UR Controller on the computer.

### Notes

- To avoid unexpected data loss, quit all applications running on the computer before the installation.
- Log on to the computer as an administrator when installing the PJP-25UR Controller.

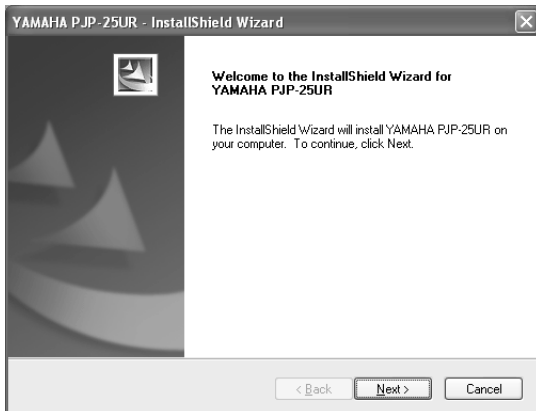
### 1 Load the supplied CD-ROM into the computer's CD-ROM drive.

### 2 Select the language.

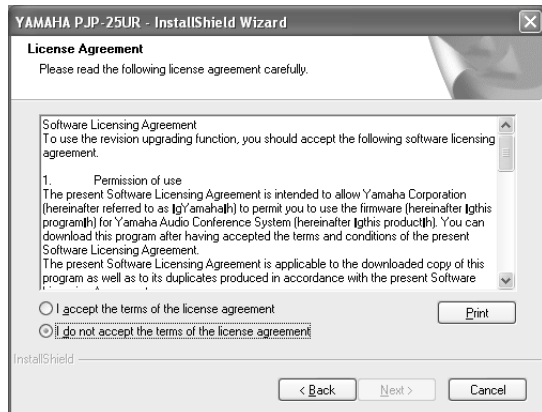
### 3 Click "Software".

The setup program starts.

### 4 Click "Next".

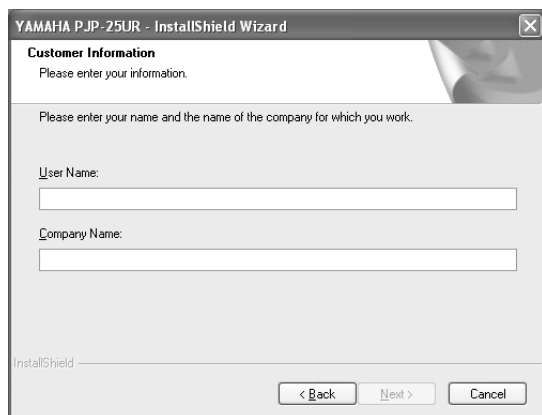


### 5 Read the contents of the license agreement carefully, select "I accept the terms of the license agreement", and then click "Next".



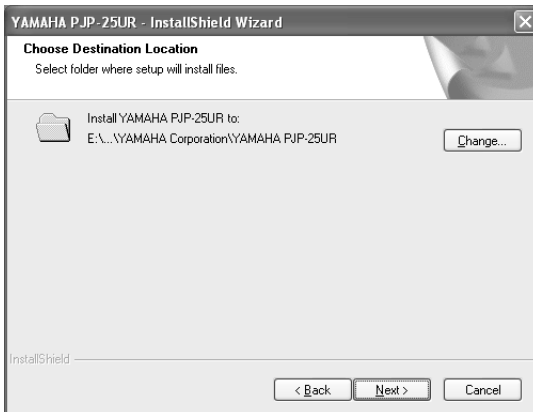
If you do not agree with the contents of the license agreement, click "I do not accept the terms of the license agreement" to cancel the installation.

### 6 Specify "User Name" and "Company Name", and then click "Next".



---

**7 Select the folder to which the files are saved, and then click "Next".**

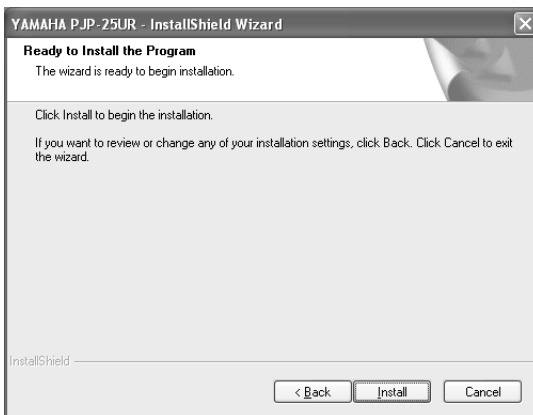


To change the destination folder, click "Change" and select a new destination.

---

**8 Click "Install".**

The installation starts.



---

**9 Click "Finish".**

The installation is completed.



If the message to reboot the computer appears, reboot it.

---

**To uninstall the PJP-25UR Controller**

Follow the procedure below to uninstall the PJP-25UR from the computer.

---

**1 Select [Start] - [Control Panel].**

The "Control Panel" screen appears.

---

**2 Click "Add or Remove Programs".**

The "Add or Remove Programs" screen appears.

---

**3 Select "YAMAHA PJP-25UR", and then click "Remove".**

The confirmation screen appears.

---

**4 Click "Yes".**

The uninstallation starts. If the uninstallation is complete, the message "Uninstall Complete" appears.

---

**5 Click "Finish".**




If the message to reboot the computer appears, reboot it.

## Basic operations of the PJP-25UR Controller

This section explains about the basic operations of the PJP-25UR Controller.


### 1 Connect this unit to the computer using the supplied USB cable.

 appears in the task tray (the lower right screen).

#### Note

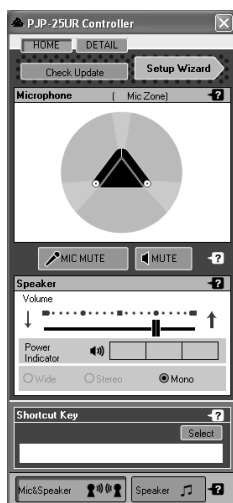
Do not connect more than one PJP-25UR to the computer at the same time.



In the case that  does not appear after this unit is connected to the computer, select [Start] - [All Programs] - [YAMAHA PJP-25UR] - [PJP-25UR Controller] to start the PJP-25UR Controller.

### 2 Press MENU/PC on this unit.

The "PJP-25UR Controller" screen appears.



### 3 Configure the settings.

Configure the settings of this unit according to the use environment.

### To quit the PJP-25UR Controller

Follow the procedure below to quit the PJP-25UR Controller.

#### 1 Click at the top right corner of the "PJP-25UR Controller" screen.

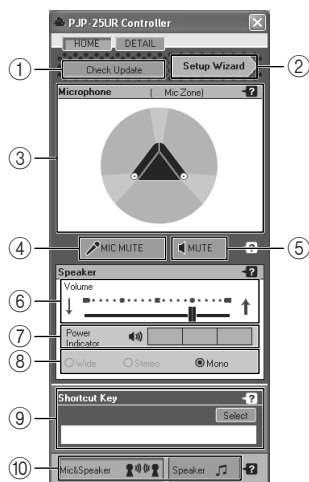
The "PJP-25UR Controller" screen closes.

#### 2 Right-click in the task tray, and then select "Exit".

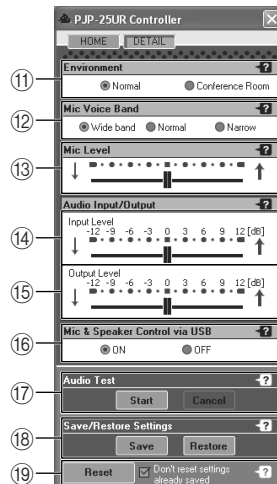
The PJP-25UR Controller exits.

## About the "PJP-25UR Controller" screen

### HOME screen



### DETAIL screen



To switch between HOME and DETAIL screens, click **HOME** or **DETAIL**. When the operation mode is set to "Speaker", the DETAIL screen is not available.

### ■ Items in the HOME screen

#### ① Check Update

Update the firmware of this unit. For details, refer to "Using the Latest Features" (page 17).

#### ② Setup Wizard

Check the installation method suited to your purpose of using this unit. For details, refer to "Checking the optimum installation method" (page 14).

#### ③ Mic Zone

Shows the microphone status (speaker angles and audio pickup area).

#### ④ MIC MUTE

Turn off (mute) the microphones of this unit temporarily. In this mode, the microphones of this unit do not pick up any sounds.

To cancel the mute function, click MIC MUTE again.



During muting, the MIC MUTE LED (above the MIC MUTE key on this unit) lights and the microphone LEDs turn off. If the mute function is canceled, the MIC MUTE LED turns off and the microphone LEDs light.

You can also operate the mute function using MIC MUTE on this unit.

#### ⑤ MUTE

Turn off (mute) the speaker of this unit temporarily. In this mode, the speaker of this unit does not output sounds.

To cancel the mute function, click MUTE again.

#### ⑥ Volume

Adjust the speaker volume of this unit using the slider bar.

#### ⑦ Power Indicator

Shows the electrical power which this unit can use for audio output.



Since this unit works according to the USB standard, it may turn on the attenuator or speaker mute function automatically to protect the system in case the unit detects high audio levels. If this happens repeatedly, turn down the volume or use the AC adapter (sold separately).

#### ⑧ Playback mode setting

Select "Wide", "Stereo" or "Mono" for the playback mode. If "Wide" or "Stereo" is selected, the EUPHONY system works. This setting is available only when the operation mode is set to "Speaker".

#### EUPHONY

Euphony is a revolutionary sound field reproduction system implemented with state-of-the-art sound technologies developed under the basic concept of enjoying beautiful sound.

#### ⑨ Shortcut Key

Select a function assigned to SHORTCUT on this unit. For details, refer to "Configuring the shortcut key" (page 14).

## ⑩ Operation mode setting

Select the operation mode of this unit. To enable both the microphones and speaker (as in the case of a conference), click "Mic&Speaker". To enable only the speaker (as in the case of listening to music), click "Speaker".

### Note

If the operation mode is set to "Mic&Speaker", this unit outputs left-channel audio only regardless of audio signal type.

## ■ Items in the DETAIL screen

### ⑪ Environment

Switch between "Normal" and "Conference Room", depending on the environment.

- **Normal** (default): when using in the normal environment
- **Conference Room**: when using in the quiet environment like a conference room

### ⑫ Mic Voice Band

Configure the microphone's voice band setting. Select a microphone's voice band mode ("Wide", "Normal", or "Narrow") suitable for your Web conference application.

### ⑬ Mic Level

Adjust the microphone sensitivity using the slider bar.

### ⑭ Input Level

Adjust the audio input level (amplification) in the range of -12.0 to +12.0 dB using the slider bar. This setting is applied to inputs from another device through the audio cable.

### ⑮ Output Level

Adjust the audio output level (amplification) in the range of -12.0 to +12.0 dB using the slider bar. This setting is applied to outputs to another device through the audio cable.

### ⑯ Mic & Speaker Control via USB

Enable or disable the interlocking volume control between the PJP-25UR and PC. Set this item to "ON" or "OFF" depending on the specification of your communication application.

### Note

You need to restart the PJP-25UR if this setting is changed. Follow the instructions on the screen to restart it.

### ⑰ Audio Test

Check the audio in the current setting. For details, refer to "Testing the audio" (page 16).

### ⑱ Save/Restore Settings

Save the settings of this unit. For details, refer to "Saving the settings of this unit" (page 15).

### ⑲ Reset

Reset the settings of this unit. For details, refer to "Resetting the settings of this unit" (page 16).

### Note

To complete the reset operation, you need to restart this unit in some cases. If the message to restart this unit appears, follow the message to restart it.

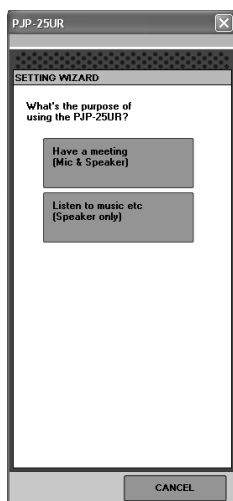
## Checking the optimum installation method

You can check the installation method suited to your purpose of using this unit. In this procedure, we will check the installation method suited to a web conference for example.

- 1 In the "PJP-25UR Controller" screen, click "Setup Wizard".

The "SETTING WIZARD" screen appears.

- 2 Click "Have a meeting".



- 3 Select the number of conference participants.
- 4 Select the relative position between the participants and this unit.

If you selected "One" in step 3, this step is not available. Skip to step 5.
- 5 Follow the on-screen instructions to install this unit.

## Configuring the shortcut key

Follow the procedure below to select a function to be activated by pressing SHORTCUT on this unit.

- 1 In the "PJP-25UR Controller" screen, click "Select".

- 2 Select a function.



### Disable

Select this if you want to disable SHORTCUT.

### Speaker Mute:

Select this if you want to assign the speaker mute function to SHORTCUT.

### MIC & Speaker / Speaker:

Select this if you want to switch the operation mode by pressing SHORTCUT.

### Select Application:

Select this if you want to activate the specified application.

- 3 Click "Apply".



If you have selected "Select Application" in step 2, select an application assigned to SHORTCUT.



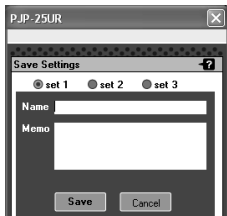
## ***Saving the settings of this unit***

Follow the procedure below to save the settings currently configured on this unit.

- 1 In the "PJP-25UR Controller" screen, click "DETAIL".**

The "DETAIL" screen appears.

- 2 Click "Save".**



- 3 Select the setting number to which the settings are saved.**

- 4 Enter a name and memo.**

Enter a given name and comment applied to the settings to be saved.

- 5 Click "Save".**

The settings are saved.

### **Note**

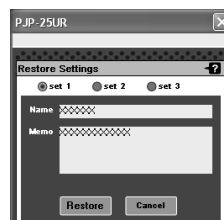
If the number you selected in step 3 has already been used, the confirmation message appears before executing the overwriting process.

## **To restore the settings**

- 1 In the "PJP-25UR Controller" screen, click "DETAIL".**

The "DETAIL" screen appears.

- 2 Click "Restore".**



- 3 Select the setting number of which you want to restore the settings.**

- 4 Click "Restore".**

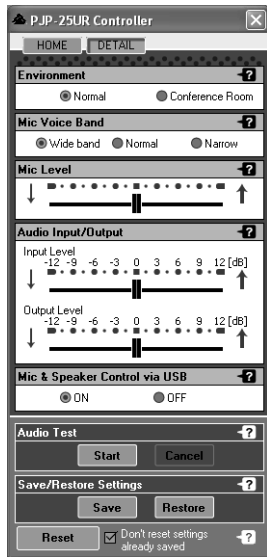
This unit automatically restarts to restore the settings.

## Testing the audio

Check the audio in the current setting. The audio is automatically recorded (five seconds) and played back. You can easily listen to the audio from this unit as a test.

### 1 In the "PJP-25UR Controller" screen, click "Detail".

The "Detail" screen appears.



### 2 Click "Start".

The audio test starts.

If you cancel the audio test, click "Cancel".

#### Contents of test

Alarm	Operation
First	Starts recording
Second	Starts playing back
Third	Finishes the test

## Resetting the settings of this unit

Follow the procedure below to reset the settings of this unit. You can specify whether to keep the settings saved to the setting numbers.

#### Note

Please note the followings when you reset the settings of this unit.

- This operation will clear all settings you changed and restore the factory default values.
- If you reset all settings, the settings saved to the setting numbers are also cleared.
- You cannot undo the reset operation.

### ■ Resetting all settings

#### 1 In the "PJP-25UR Controller" screen, click "DETAIL".

The "DETAIL" screen appears.

#### 2 Uncheck the "Don't reset settings already saved" box.

#### 3 Click "Reset".

All settings are reset to default.

#### Note

To complete the reset operation, you need to restart this unit in some cases. If the message to restart this unit appears, follow the message to restart it.

### ■ Resetting this unit except settings saved to the setting numbers

#### 1 In the "PJP-25UR Controller" screen, click "DETAIL".

The "DETAIL" screen appears.

#### 2 Check the "Don't reset settings already saved" box.

#### 3 Click "Reset".

This unit is reset to default except settings saved to the setting numbers.

#### Note

To complete the reset operation, you need to restart this unit in some cases. If the message to restart this unit appears, follow the message to restart it.

# Using the Latest Features

You can download the firmware (program to control the functions of this unit) to use the latest features.

## ***Software Licensing Agreement***

To use the revision upgrading function, you must accept the following software licensing agreement.

### **1. Permission of use**

The present Software Licensing Agreement is intended to allow Yamaha Corporation (hereinafter referred to as "Yamaha") to permit you to use the firmware (hereinafter "this program") for Yamaha PJP-25UR (hereinafter "this product"). You can download this program after having accepted the terms and conditions of the present Software Licensing Agreement.

The present Software Licensing Agreement is applicable to the downloaded copy of this program as well as to its duplicates produced in accordance with the present Software Licensing Agreement.

### **2. Inhibition of redistribution**

You are permitted to download this program only for the purpose of upgrading the functions of this product. Uploading or posting this program at a website accessible by the general public is prohibited unless you have permission from Yamaha.

### **3. Production of duplicates**

You may only duplicate this program for the purpose of backup or when upgrading multiple units of this product.

### **4. Inhibition of decompiling, reverse engineering or disassembling**

You may not decompile, reverse-engineer, disassemble, alter, permit the use of, distribute or create any derivative works of this program.

### **5. Limitation of liabilities**

Yamaha will not assume any liabilities on the damage to the customers caused by the present Software Licensing Agreement.

### **6. Export control**

You shall comply with all applicable export laws and regulations of any relevant countries including but not limited to Japan and your country. You shall not, directly or indirectly, export or re-export this program except in compliance with such laws and regulations.

### **7. Compliance to laws and regulations**

This Software Licensing Agreement should be compliant to the laws and regulations of Japan and your country, and should be interpreted in accordance with the laws of Japan.

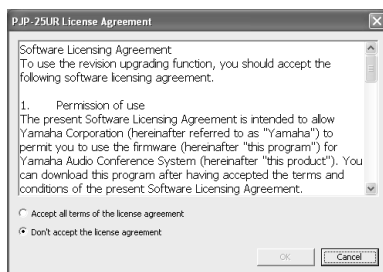
## Updating the firmware via a network

### Notes

- Firmware update is available only if the computer connecting to this unit is connected to the Internet. To update the firmware without connection to the Internet, follow "Updating the firmware using a local file" (page 19).
- Once the firmware update is started, do not perform any other operation until the update operation is completed. If the update operation is interrupted, this unit may become unusable, in which case you need to return this unit to the factory for repairs.
- Do not remove the USB cable or LAN cable during the firmware update. Otherwise, this unit could become unusable, in which case you need to return this unit to the factory for repairs.

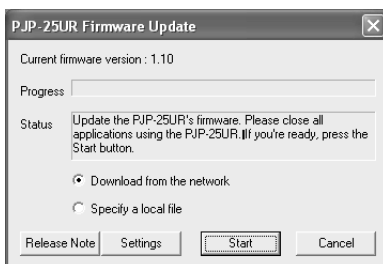
### 1 In the "PJP-25UR Controller" screen, click "Check Update".

The "PJP-25UR License Agreement" screen appears.



### 2 Read the contents of license agreement carefully, select "Accept all terms of the license agreement", and then click "OK".

The "PJP-25UR Firmware Update" screen appears.



If you do not agree with the contents of the license agreement, click "Don't accept the license agreement" to cancel the firmware update.

### 3 Select "Download from the network", and then click "Start".

The firmware version confirmation screen appears.

### 4 Check the latest firmware version, and then click "OK" to start the firmware update.

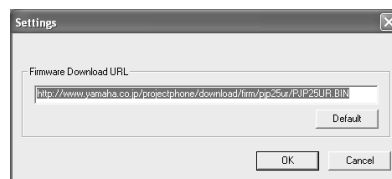
The firmware update starts.

### To specify the firmware download URL

This feature is useful in managing the firmware versions of multiple PJPs.

### 1 In the "PJP-25UR Firmware Update" screen, click "Settings".

The "Settings" screen appears.



### 2 Enter the URL from which to download the firmware.



You can restore the default URL by clicking "Default".

### 3 Click "OK".

The firmware download URL is set.

## ***Updating the firmware using a local file***

If the computer connecting to the PJP-25UR cannot be connected to the Internet, follow the procedure below to update the firmware manually using a local file.

### **Notes**

- Once the firmware update is started, do not perform any other operation until the update operation is completed. If the update operation is interrupted, this unit may become unusable, in which case you need to return this unit to the factory for repairs.
- Do not remove the USB cable during the firmware update. Otherwise, this unit could become unusable, in which case you need to return this unit to the factory for repairs.

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### **1 In the "PJP-25UR Controller" screen, click "Check Update".**

The "PJP-25UR License Agreement" screen appears.

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### **2 Read the contents of license agreement carefully, select "Accept all terms of the license agreement", and then click "OK".**

The "PJP-25UR Firmware Update" screen appears.

If you do not agree with the contents of the license agreement, click "Don't accept the license agreement" to cancel the firmware update.

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### **3 Select "Specify a local file", and then click "Start".**

The "Open" screen appears.

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### **4 Select the firmware file, and then click "Open".**

The firmware version confirmation screen appears.

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### **5 Check the latest firmware version, and then click "OK" to start the firmware update.**

The firmware update starts.

## ***Checking the firmware release note***

You can check the firmware release note by clicking "Release Note" in the "PJP-25UR Firmware Update" screen.

# Troubleshooting

Refer to the following tables when this unit does not function properly. If the problem you are experiencing is not listed or if the instruction does not help, contact the nearest authorized YAMAHA dealer or service center (listed in the "Quick Start Guide").

## ***Q1: LED indicator does not light up***

Problem	Cause	Remedy
<b>The power is not turned on.</b>	The USB cable is not connected properly.	Check that the USB cable is connected firmly.

## ***Q2: Have an audio problem***

Problem	Cause	Remedy
<b>The audio from the other unit cannot be heard.</b>	The microphones are muted on the other unit.	–
<b>The audio is interrupted.</b>	The audio cable is not connected properly.	Check that the audio cable is connected firmly.
	The voltage decreases due to high volume.	<ul style="list-style-type: none"> <li>• Turn the volume down.</li> <li>• Use the AC adapter (sold separately).</li> </ul>
<b>The playback volume goes down suddenly.</b>	The auto-attenuator function is working.	Turn the volume down.
<b>The speaker volume cannot be turned up.</b>	The volume setting in Windows is too low.	Adjust the volume setting in Windows.
<b>The unit generates feedback noises.</b>	This unit is placed near the wall.	Move this unit away from the wall.
	An object is placed near this unit.	Avoid placing an object in front of the microphones of this unit.
	This unit is used in a room with high reverberation.	<ul style="list-style-type: none"> <li>• Place objects with high sound absorbance in the room other than in front of the microphones.</li> <li>• Avoid talking at a loud voice to reduce reverberations.</li> </ul>

# Specifications

## General

### Interface:

USB 2.0 (full), Analog I/O (stereo-mini),  
AC adapter (DC 5V IN)

### Power consumption (max):

USB bus power: 2.5 W or less, Self power: 3.0 W or less

### Radio interference standard:

FCC Part 15 (US)  
EN55022 (EU)

### Operating environment:

Temperature: 0 to 40°C (32 to 104°F),  
Humidity: 20 to 85%

### Dimensions (W x H x D):

229 x 34 x 152 mm (9-1/32" x 1-11/32" x 6")

### Weight:

570 g (1.26 lbs)

### Power source:

USB bus power, Self power

### Accessories:

USB cable, CD-ROM, Quick Start Guide

### Option:

AC adapter (sold separately)

### Computer environment:

OS: Microsoft® Windows® Vista/XP Professional/  
XP Home Edition/2000  
CPU: 750 MHz or higher  
(Intel® Pentium®/Celeron® equivalent processor)  
Memory: 128 MB or more  
(256 MB or more recommended)

### Other:

Firmware revision upgrade  
(transfer from PC through USB)

## Audio

### Arrayed microphones:

4 units x 3 lines

### Speaker:

2 units, monaural output, stereo output (when using the  
speaker only)

### Frequency bandwidth:

300 to 20,000 Hz

### Signal processing:

Adaptive echo canceller, Microphone array control,  
Stereo output

